

REMARKS

Claims 1 and 2 are all the claims pending in the application.

I. RESPONSE TO OBJECTION TO THE SPECIFICATION

According to the examiner, the title of the invention is not descriptive. See Section No. 1 at page 2 of the Office Action. The examiner requests that Applicants amend the title to be clearly indicative of the invention to which the claims are directed.

In response, Applicants have amended the title to read “An article molded from a polylactic acid resin.” Withdrawal of the present objection to the specification is requested.

II. RESPONSE TO OBJECTION TO THE CLAIMS

Referring to Section No. 2 at page 2 of the Office Action, Claim 2 is objected to because the examiner is of the opinion that the phrases "the glass fiber comprises 5 to 30 % by weight" and "said hollow glass balloon comprises 5 to 30 % by weight" are grammatically confusing.

In response, Applicants have rewritten Claim 2 as shown at page 3 above, which is largely consistent with the suggestion put forth by the examiner at Section No. 2 on page 2 of the Office Action. Rewritten Claim 2 is not grammatically confusing.

Withdrawal of the present objection to the claims is requested.

III. RESPONSE TO REJECTION UNDER 35 U.S.C. § 103

Referring to Section No. 3 at pages 2 through 4 of the Office Action, Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,573,340 (“Khemani”) in view of U.S. Patent No. 5,017,629 (“Wilson”) and U.S. Patent No. 5,412,003 (“Akiyama”).

Applicants respectfully traverse. The presently claimed subject matter is not taught or suggested by the applied combination of references.

Claim 1 is the only pending independent claim. It is directed to a resin molded article produced by molding and crystallizing a composition. The composition of Claim 1 comprises a

crystallizable, biodegradable plastic resin containing a polylactic acid as its main component, a glass fiber, and a hollow glass balloon which has been surface treated with a coupling agent. The molded article of Claim 1 has a heat distortion temperature of at least 80 °C and a density of up to 1.2 g/cm³.

The present specification shows that the claimed resin molded articles enjoy outstanding heat resistance, while overcoming the problem of an increase in specific weight that had previously been associated with improvements in heat resistance. See the paragraph bridging pages 14 and 15 and the Examples through page 17 of the specification. Other advantages of the claimed resin molded articles include high mechanical strength, thermoplasticity, and recyclability. See page 18 of the specification.

On the other hand, as stated in its Abstract, Khemani teaches:

Biodegradable polymer blends suitable for laminate coatings, wraps and other packaging materials manufactured from at least one “hard” biopolymer and at least one “soft” biopolymer. “Hard” biopolymers tend to be more brittle and rigid and typically have a glass transition temperature greater than about 10 °C. “Soft” biopolymers tend to be more flexible and pliable and typically have a glass transition temperature less than about 0 °C.

The object of the invention of Khemani is to obtain a film with good elongation and an excellent dead-fold property (col. 4, lns. 59-65). Further, at col. 9, lns. 34-36, Khemani teaches that “[p]olylactic acid typically has a glass transition temperature of about 59 °C and a melting point of about 178 °C. It has low elongation and is quite hard,” and the biodegradable plastic resin containing a polylactic acid as its main component recited in present Claim 1 is identified as having low elongation and being quite hard.

Thus, those skilled in the art who read Khemani can understand that the biodegradable plastic resin containing a polylactic acid as its main component recited in present Claim 1 is improper for the biodegradable polymer films and sheets suitable for use as laminate coatings as

well as wraps and other packaging materials of Khemani, but they cannot arrive at the presently claimed resin molded article comprising “hard” biopolymer as its main component, which “enjoy outstanding heat resistance, while overcoming the problem of an increase in specific weight that had previously been associated with improvements in heat resistance.” Rather, Khemani teaches materials with “hard” biopolymers as the main component and not containing any “soft” biopolymer as having low elongation.

Further, blends of Biomax and Ecoflex-F are produced in Examples 1-3 of Khemani, and these features are measured in Fig. 1-9, wherein talc and SiO₂ are included as inorganic fillers. Further, in Examples 4 and 5, blends of Biomax and Ecoflex-F are produced, and the one with higher talc is assessed as having better dead-fold property. In Examples 6 and 7, it is only stated that inorganic filler is added to the blend of Biomax and Ecoflex-F; and in Examples 8 through 12, talc, TiO₂, and CaCO₃ are included in the blends of Biomax and Ecoflex-F as inorganic fillers. That is to say, Khemani does not teach a polymer blend comprising glass fiber in its Examples, nor does Khemani teach a polymer blend comprising a hollow glass sphere.

As the examiner mentions, Khemani gives examples of glass fiber and hollow glass sphere as inorganic fillers, but Khemani does not suggest what features these inorganic fillers will have when added to a biodegradable plastic resin having “hard” biopolymer as the main component.

Further, the impact strength will decrease and the breaking elongation will decrease by adding the hollow glass sphere in the polymer. The object of Khemani’s invention is to increase the breaking elongation, thus, the object of Khemani differs from the object of the presently claimed subject matter.

The presently claimed subject matter is the first subject matter that was able to obtain a molded article having a heat distortion temperature of at least 80 °C and a density of up to 1.2 g/cm³ by comprising both a glass fiber and a hollow glass balloon which has been surface treated with a coupling agent in the biodegradable plastic resin containing a polylactic acid as its main component.

For the foregoing reasons, Applicants request reconsideration and withdrawal of the present § 103 rejection.

IV. CONCLUSION

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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